We claim:

1. An adhesive composition for bonding an elastomer to a substrate comprising a solvent, a crosslinker and a film former, wherein the crosslinker comprises at least one organic compound that is reactive with said elastomer to chemically couple the elastomer to the adhesive, and wherein the film former is a block copolymer with a polysilicone segment and a hard segment.

2. The adhesive composition according to claim 1, wherein the film former is selected from the group consisting of polyimide-polysiloxane block copolymers, silicone-polyetherimide block copolymers, poly(arylimide)-poly(dimethylsiloxane) block copolymers, and aromatic polyamide-disiloxane multiblock copolymers.

3. The adhesive composition according to claim 2, wherein the film former is a poly(dimethylsiloxane)-etherimide copolymer.

4. The adhesive composition according to claim 1, wherein the crosslinker is a compound selected from the group consisting of triallyl cyanurate, trimetharyl isocyanurate, triallyl isocyanurate, triacrylformal, triallyl trimellitate, bismaleimide, polymaleimide, N,N'-m-phenylenebismaleimide, diallyl phthalate, tetrallyl terephthalamide, tris(diallylamine)-S-triazine, triallyl phosphite, and N,N-diallylacrylamide, zinc diacrylate, zinc triacrylate and zinc dimethacrylate and a combination thereof.

5. The adhesive composition according to claim 1, wherein the crosslinker is present in an amount from about 100 parts by weight to about 2000 parts by weight based on 100 parts by weight of the film former.

6. The adhesive composition according to claim 1, wherein the film former is present in an amount from about 2 parts by weight to about 20 parts by weight based on the weight of 100 parts of said solvent.

7. An adhesive composition comprising:

a) a crosslinker selected from the group consisting of bismaleimide, polymaleimide, N, N'-m-phenylene bismaleimide, and a combination thereof, and

b) a poly(dimethylsiloxane)-etherimide copolymer.

8. A bonded composite comprising a peroxide-cured elastomer and a substrate other than said elastomer, said elastomer and substrate bonded by the adhesive composition according to claim 1, wherein said elastomer is selected from the group consisting of silicone rubber, nitrile rubber, ethylene/propylene copolymer rubber (EPM); ethylene/propylene/diene terpolymer rubber (EPDM), and hydrogenated nitrile butadiene rubber (HNBR).

9. The adhesive composition according to claim 1, wherein the crosslinker is present in an amount from about 500 parts by weight to about 900 parts by weight based on 100 weight parts of said film former

10. A method of bonding an elastomer to a substrate, the method comprising:

a) coating the substrate with an adhesive composition wherein the adhesive composition comprises in admixture, a solvent, a crosslinker reactive with a peroxide and a block copolymer comprising a polysilicone segment and a hard segment,

b) drying the adhesive composition coating,

c) applying the elastomer to the adhesive composition coating, and

d) curing the elastomer in the presence of a peroxide and heat, and

e) chemically coupling said elastomer to said adhesive.

11. The method according to claim 10, wherein the crosslinker is selected from the group consisting of bismaleimide, polymaleimide, N, N'-m-phenylene bismaleimide, and a combination thereof.

12. The method according to claim 10, further comprising the step of coating the substrate with a primer composition prior to applying the adhesive composition.

13. The method according to claim 10, wherein the substrate is metal.

14. The method according to claim 10, wherein the elastomer is selected from the group consisting of a silicone elastomer, a nitrile elastomer, ethylene/propylene copolymer rubber (EPM); ethylene/propylene/diene terpolymer rubber (EPDM), and hydrogenated nitrile butadiene rubber (HNBR).

15. The method according to claim 10, wherein the block copolymer is selected from the group consisting of polyimide-polysiloxane block copolymers, silicone-polyetherimide block copolymers, poly(arylimide)-poly(dimethylsiloxane) block copolymers, and aromatic polyamide-disiloxane multiblock copolymers.

16. The adhesive composition according to claim 15, wherein the film former is a poly(dimethylsiloxane)-etherimide copolymer.

17. An article of manufacture comprising:

a) a metal substrate,

b) a cured adhesive composition comprising at least one peroxide-reactive organic crosslinker compound and a block copolymer with a polysilicone segment and a hard segment, and

c) a cured elastomer chemically coupled to said adhesive

said adhesive forming a bonded interlayer between a) and c).

18. The article of manufacture according to claim 17, wherein the block copolymer is selected from the group consisting of polyimide-polysiloxane block copolymers, silicone-polyetherimide block copolymers, poly(arylimide)-poly(dimethylsiloxane) block copolymers, and aromatic polyamide-disiloxane multiblock copolymers.

19. The article of manufacture according to claim 17, wherein the organic compound is selected from the group consisting of bismaleimide, polymaleimide, N, N'-m-phenylene bismaleimide, and a combination thereof.

20. The article of manufacture according to claim 17, wherein the elastomer is a silicone elastomer or a peroxide cured hydrogenated nitrile butadiene rubber (HNBR).

21. An adhesive essentially absent a nitroso compound, and comprising from 50% to 90% by weight of an organic solvent, a film former, and from about 100 to about 2000 parts by weight per 100 parts of said film former of a crosslinker, said film former is selected from the group consisting of polyimide-polysiloxane block copolymers, silicone-polyetherimide block copolymers, poly(arylimide)-poly(dimethylsiloxane) block copolymers, and aromatic polyamide-disiloxane multiblock copolymers.